In the Claims

Please amend the claims, as follows:

1. (currently amended) A method, comprising:

in a solution having a specific acidic pH and containing metal cations, adding (i) an amphipathic, heterocyclic, metal-coordinating compound that is selected based, at least in part, on a charge distribution which maintains, at least approximately, a charge neutrality of the amphipathic, heterocyclic, metal-coordinating compound at said specific acidic pH and (ii) a sorbent, such that the addition at the specific acidic pH causes at least some of the metal-coordinating compound to bind with some of the metal cations and at least some of the metal-coordinating compound to sorb to the sorbent, along with any metal cations bound therewith by forming a combination of the metal-coordinating compound sorbed to the sorbent and, thereafter, introducing the combination into said solution.

2. (original) The method of claim 1 wherein said sorbent includes activated carbon.

3. (previously presented) The method of claim 1 wherein said metal-coordinating compound includes a binding portion containing a plurality of heteroatoms and a hydrophobic portion for hydrophobically sorbing to the sorbent.

4. (original) The method of claim 1 wherein the metal-coordinating compound is selected from the group consisting of a benzotriazole and a benzothiazole.

5. (previously presented) The method of claim 1 wherein said specific pH is in a range from approximately pH 2 to pH 6 and said metal-coordinating compound is benzotriazole, benzothiazole or methylbenzotriazole.

6. (original) The method of claim 5 wherein said sorbent is an H type activated carbon.

7. (original) The method of claim 1 wherein said specific pH is less than approximately 2.

8. (previously presented) The method of claim 7 wherein said metal-coordinating compound is selected as at least one member of the group consisting of carboxybenzotriazole, any fatty acid conjugated benzotriazole derivative, butylbenzotriazole, other aliphatic conjugated benzotriazole and benzothiazole.

9. (original) The method of claim 7 wherein said sorbent is an acidic activated carbon.

10. (currently amended) ~~The method of claim 7 wherein~~ A method, comprising:
in a solution having a specific acidic pH of less than approximately 2 and containing metal cations, adding (i)

an amphipathic, heterocyclic, metal-coordinating compound that is selected based, at least in part, on a charge distribution which maintains, at least approximately, a charge neutrality of the amphipathic, heterocyclic, metal-coordinating compound at said specific acidic pH and (ii) a sorbent, such that the addition at the specific acidic pH causes at least some of the metal-coordinating compound to bind with some of the metal cations and at least some of the metal-coordinating compound to sorb to the sorbent, along with any metal cations bound therewith and said sorbent is an L type activated carbon.

11. (previously presented) The method of claim 9 wherein said metal-coordinating compound is at least one of benzotriazole and benzothiazole.

12. (original) The method of claim 11 wherein said sorbent is an acidic activated carbon.

13. (currently amended) ~~The method of claim 11 wherein~~ A method, comprising:
in a solution having a specific acidic pH of less than approximately 2 and containing metal cations, adding (i) an amphipathic, heterocyclic, metal-coordinating compound that is selected based, at least in part, on a charge distribution which maintains, at least approximately, a charge neutrality of the amphipathic, heterocyclic, metal-coordinating compound at said specific acidic pH and that is at least one of benzotriazole and benzothiazole and (ii) a sorbent, such that the addition at the specific acidic pH causes at least some of the metal-coordinating compound to bind with some of the metal cations and at least some of the metal-coordinating compound to sorb to the sorbent, along with any metal cations bound therewith and said sorbent is an L type activated carbon that is an acidic activated carbon.

14. (original) The method of claim 1 including enclosing the sorbent and the metal-coordinating compound in a liquid permeable enclosure through which said acidic solution passes.

15. (currently amended) ~~The method of claim 14~~ A method, comprising:
in a solution having a specific acidic pH and containing metal cations, adding (i) an amphipathic, heterocyclic, metal-coordinating compound that is selected based, at least in part, on a charge distribution which maintains, at least approximately, a charge neutrality of the amphipathic, heterocyclic, metal-coordinating compound at said specific acidic pH and (ii) a sorbent, such that the addition at the specific acidic pH causes at least some of the metal-coordinating compound to bind with some of the metal cations and at least some of the metal-coordinating compound to sorb to the sorbent, along with any metal cations bound therewith;

enclosing the sorbent and the metal-coordinating compound in a liquid permeable enclosure through which said acidic solution passes; and

~~including~~ equilibrating the sorbent and the metal-coordinating compound prior to said enclosing.

16. (currently amended) ~~The method of claim 1 including~~ A method, comprising:

in a solution having a specific acidic pH and containing metal cations, adding (i) an amphipathic, heterocyclic, metal-coordinating compound that is selected based, at least in part, on a charge distribution which maintains, at least approximately, a charge neutrality of the amphipathic, heterocyclic, metal-coordinating compound at said specific acidic pH and (ii) a sorbent, such that the addition at the specific acidic pH causes at least some of the metal-coordinating compound to bind with some of the metal cations and at least some of the metal-coordinating compound to sorb to the sorbent, along with any metal cations bound therewith; and

removing from the solution the metal-coordinating compound sorbed to the sorbent and the metal cations bound with the sorbed metal-coordinating compound.

17. (original) The method of claim 1 wherein the metal cations bind the metal-coordinating compound by each metal ion coordinating with a plurality of heteroatoms of the metal-coordinating compound.

18. (canceled)

19. (currently amended) ~~The method of claim 1~~ A method, comprising:

in a solution having a specific acidic pH and containing metal cations, adding (i) an amphipathic, heterocyclic, metal-coordinating compound that is selected based, at least in part, on a charge distribution which maintains, at least approximately, a charge neutrality of the amphipathic, heterocyclic, metal-coordinating compound at said specific acidic pH and (ii) a sorbent, such that the addition at the specific acidic pH causes at least some of the metal-coordinating compound to bind with some of the metal cations and at least some of the metal-coordinating compound to sorb to the sorbent, along with any metal cations bound therewith, wherein adding includes separately introducing each of the metal-coordinating compound and the sorbent to said solution.

20. (original) The method of claim 19 wherein said metal-coordinating compound is introduced before said sorbent is introduced.

21. (original) The method of claim 1 wherein said metal-coordinating compound includes a ring selected from the group consisting of a triazole ring and a thiazole ring and the metal cations bind with said ring.

22. (original) The method of claim 1 wherein said solution is aqueous and adding includes selecting a compound from the group consisting of a benzotriazole and a benzothiazole as said metal-coordinating compound.

23. (canceled)

24. (original) The method of claim 1 wherein the metal cations include at least one of an arsenic ion, a cadmium ion, a cobalt ion, a copper ion, a gold ion, a iron ion, a lead ion, a mercury ion, a nickel ion, a selenium ion, a silver ion, and a zinc ion and wherein the method includes selecting as the sorbent an activated carbon.

25. (original) The method of claim 1 wherein (1) said metal cations which are bound with said metal-coordinating compound, and (2) said metal-coordinating compound sorbed to said sorbent form a complexation, said method further comprising: removing the metal cations from the complexation to recover a base metal of the metal cations.

26. (previously presented) A method, comprising:

in a solution having a specific acidic pH and containing metal cations, adding (i) an amphipathic, heterocyclic, metal-coordinating compound and (ii) a sorbent and providing said metal-coordinating compound and said sorbent in a dissolvable tablet form, such that the addition at the specific acidic pH causes at least some of the metal-coordinating compound to bind with some of the metal cations and at least some of the metal-coordinating compound to sorb to the sorbent, along with any metal cations bound therewith.

27-30. (canceled)

31. (currently amended) ~~The method of claim 30~~ A method for removing metal cations from a solution having a specific acidic pH, said method comprising:

enclosing an amphipathic, heterocyclic metal-coordinating compound that is selected based, at least in part, on a charge distribution which maintains, at least approximately, a charge neutrality of the amphipathic, heterocyclic, metal-coordinating compound at said specific pH and a sorbent in a flow-through enclosure; and

causing said solution to flow through the enclosure such that at least some of the metal cations bind with the binding compound at the specific acidic pH and at least some of the metal-coordinating compound sorbs to the sorbent at said specific acidic pH, in said enclosure, along with any metal cations bound therewith and including sorbing the metal-coordinating compound to the sorbent before said enclosing.

32. (original) ~~The method of claim 30~~ A method for removing metal cations from a solution having a specific acidic pH, said method comprising:

enclosing an amphipathic, heterocyclic metal-coordinating compound that is selected based, at least in part, on a charge distribution which maintains, at least approximately, a charge neutrality of the amphipathic, heterocyclic, metal-coordinating compound at said specific pH and a sorbent in a flow-through

enclosure; and

causing said solution to flow through the enclosure such that at least some of the metal cations bind with the binding compound at the specific acidic pH and at least some of the metal-coordinating compound sorbs to the sorbent at said specific acidic pH, in said enclosure, along with any metal cations bound therewith and including equilibrating the metal-coordinating compound with the sorbent before said enclosing.

33-70. (canceled)